

Elk City Water and Sewer Association (Surface Water) PWS # 2250017

SOURCE WATER ASSESSMENT FINAL REPORT

February 12, 2002



**State of Idaho
Department of Environmental Quality**

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Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the watershed characteristics.

This report, *Source Water Assessment for Elk City Water and Sewer Association, Idaho*, describes the Elk City public drinking water system, the zone boundary of water contribution, and the associated potential contaminant sources located within these boundary. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Elk City Water and Sewer Association drinking water system is supplied by a single surface water intake situated on Big Elk Creek approximately 1/4 mile north of Elk City. There are scattered residential homes on individual septic systems situated on a low volume unpaved road up gradient of the intake. There are several inactive mines but no other industrial facilities located above the intake. The potential contaminant impact from these combined facilities is considered to be low to moderate. The most recent testing of the Elk City Water and Sewer Association's surface water intake indicates that the source has experienced one trace detection of the inorganic compounds (IOC) arsenic and sodium. Both detections were well below maximum contaminant levels (MCLs). These detections may have been caused by water line contamination down stream of the treatment plant rather than the source water. Although sample data in the State's drinking water database (DWIMS) for the Elk City Water and Sewer Association is limited, there are no detections of synthetic organic compounds (SOCs) or volatile organic compounds (VOCs). This system has a low risk rating for contamination.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

Partnerships with state and local agencies and any future development in the source water area should be established and are critical to success. Due to the fairly short time associated with the movement of surface waters, drinking water protection activities should be aimed at short-term management strategies with the development of long-term management strategies to counter any future contamination threats. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission and the local Soil and Water Conservation District, and the Natural Resources Conservation Service, the U.S. Forest Service and the Idaho Dept. of Lands.

A community with a fully developed drinking water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Lewiston Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR ELK CITY WATER AND SEWER ASSOCIATION, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area, map showing the entire watershed contributing to the delineated area and the inventory of significant potential sources of contamination identified within the delineated area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is attached.

Background

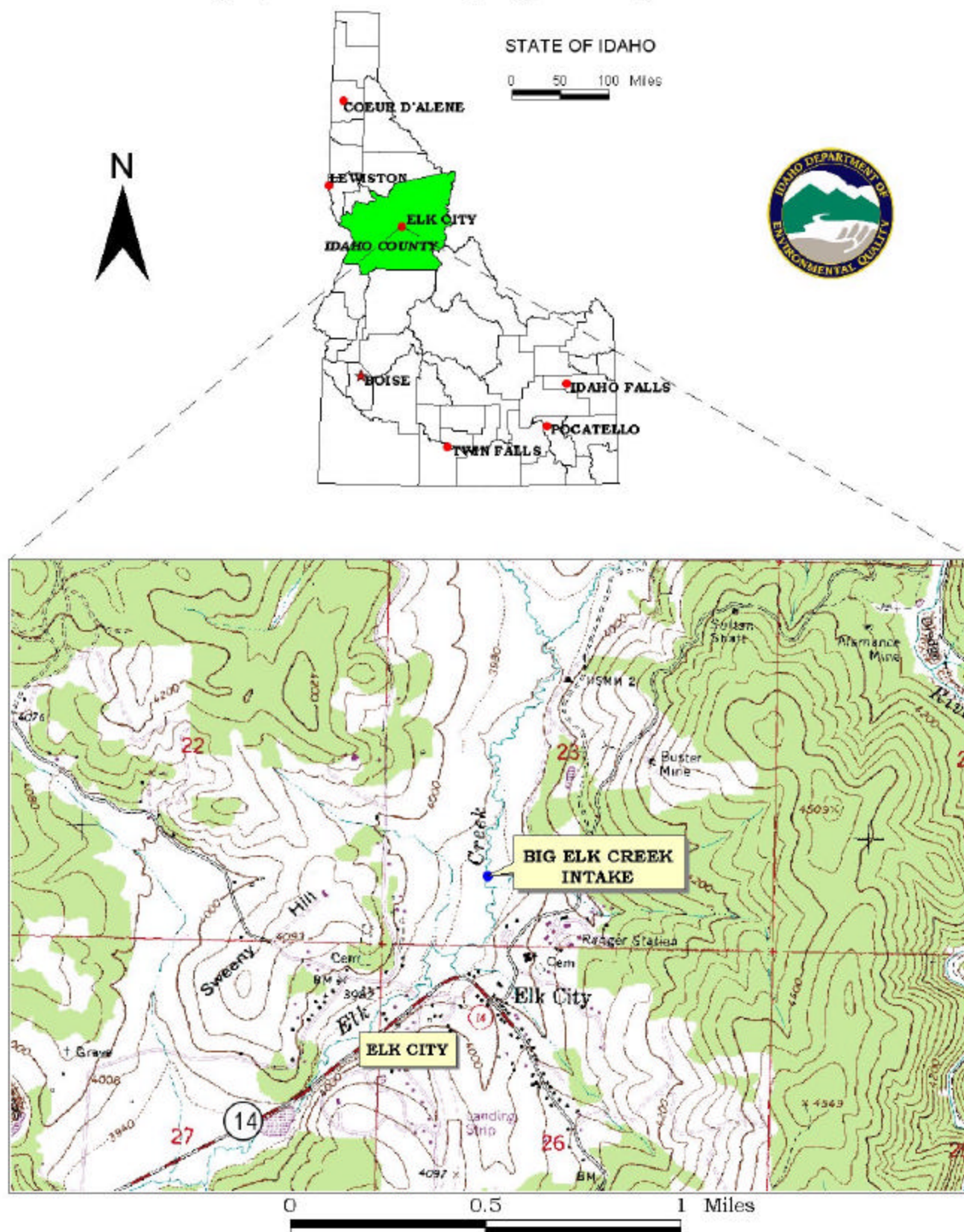
Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the intakes and watershed characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

FIGURE 1. Geographic Location of Big Elk City Water & Sewer Assn



Section 2. Conducting the Assessment

General Description of the Source Water Quality

Elk City, Idaho is a community of approximately 350 people, located on State route 14 approximately 50 miles east of Grangeville, Idaho. The public drinking water system for the Elk City Water and Sewer Association is comprised of one surface water intake. The surface water intake is located 1/4 mile north of Elk City on Big Elk Creek (Figure 1). This report will focus on the single surface water intake portion of the City's drinking water facility.

The primary water quality issue currently facing Elk City Water and Sewer Association is that of potential surface water bacterial contamination up stream and in the immediate area of the intake system. In recent years water sample analysis indicates that the source has experienced one trace detection each of the inorganic compounds (IOCs) arsenic and sodium. Both detections were well below maximum contaminant levels (MCLs). These detections may have been caused by water line contamination down stream of the treatment plant rather than the source water. Although sample data in the State's drinking water database (DWIMS) for the Elk City Water and Sewer Association is limited, there are no detections of synthetic organic compounds (SOCs) or volatile organic compounds (VOCs). This system has a low risk rating for contamination.

Defining the Zones of Contribution--Delineation

To protect surface water systems from such potential contaminant pathways, the EPA required that the entire drainage basin be delineated upstream from the intake to the hydrologic boundary of the drainage basin (U.S. EPA, 1997b). The delineation process established the physical area around an intake that became the focal point of the assessment. The Big Elk Creek drainage basin consists of approximately 14,489 acres.

The delineated source water assessment area for Elk City Water and Sewer Association can best be described as undeveloped forested recreational. The actual data used by DEQ in determining the source water assessment delineation area are available upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of surface water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Although there has been some historic gold exploration and minor production in the late 1800's and early 1900's the present dominant land use outside Elk City is undeveloped forested recreational. Land use within the city limits consists of residential homes and small businesses. Homes within Elk City and homes outside of town operate with individual septic systems. The Elk City central wastewater system consists of wastewater treatment lagoons. Storm water runoff is the primary potential contaminant source within the Big Elk Creek watershed. Elk City's mining history is reflected in the Potential Contaminant Inventory (Table 1).

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination. These involve educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply intake.

Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted during August 2000. This involved identifying and documenting potential contaminant sources within the Elk City Source Water Assessment Area through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. A map showing the delineated area with the potential contaminant sources is included (Figure 2). A total of 9 potential contaminant sites are located within the delineated source water area. The potential contaminant sources are 8 mining prospects and 1 CERCLA site (Figure 2). However, these prospects are considered to be a minimal threat to water quality. Table 1 lists the potential contaminants of concern and information source.

Table 1. Elk City, Potential Contaminant Inventory

SITE #	Source Description ¹	Source of Information	Potential Contaminants ¹
1	CERCLA Site	Database Search	IOC,SOC,VOC
2	Mine Prospect	Database Search	IOC
3	Mine Prospect	Database Search	IOC
4	Mine Prospect	Database Search	IOC
5	Mine Prospect	Database Search	IOC
6	Mine Prospect	Database Search	IOC
7	Mine Prospect	Database Search	IOC
8	Mine Prospect	Database Search	IOC
9	Mine Prospect	Database Search	IOC

¹IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

The surface water intake was ranked as high, moderate, or low susceptibility according to the following considerations: hydrologic characteristics, physical integrity and construction of the intake, land use characteristic, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each intake is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Intake Construction

The construction of the Elk City public water system intake directly affects the ability of the intake to protect the source from contaminants. The Elk City drinking water system consists of one intake located on Big Elk Creek. The intake produces surface water for domestic and industrial uses. The intake pipe diverts water to a five-foot diameter cistern. Captured water is then fed to the Elk City 's treatment plant prior to distribution to 102 connections in the Elk City area.

Potential Contaminant Source and Land Use

The Elk City drinking water intake is located in an area with minimal upstream development and one unpaved road. There are no obvious threats to water quality other than the inherent threat present for all surface intakes. Because the system consists of a surface water intake with no immediate filter mechanism, the system's construction is rated as moderate risk for contamination (Table 2).

In terms of the total susceptibility score, it can be seen from Table 2 that the Elk City Big Elk Creek facility has a low risk rating for susceptibility to microbial, inorganic, volatile and synthetic organic contamination.

Table 2. Summary of Elk City Water and Sewer Association Water System Susceptibility Evaluation¹

Intake	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
	IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
1	L	L	L	L	M	L	L	L	L

¹H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the Elk City Water and Sewer Association drinking water protection activities should focus on implementation of practices aimed at reducing the impacts of storm water runoff and within the delineated source water areas. Most of the delineated areas are outside the direct jurisdiction of Elk City. Partnerships with state and local agricultural agencies and industry groups should be established and are critical to success. Due to the relatively short time involved with the movement of surface water, drinking water protection activities should be aimed at short-term management strategies with an emphasis on dealing with long-term future impacts from these same sources. Source water protection activities for agriculture should be coordinated with the Idaho Department of Agriculture, the Soil Conservation Commission and Soil and Water Conservation District, and the Natural Resources Conservation Service.

While the surface water sources possesses adequate quality and yield, limitations and vulnerability related to the construction of the intakes should be reviewed. An investigation of the feasibility of a shift to potential ground water sources to augment or replace the current surface water system should be considered.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Lewiston Regional DEQ Office (208) 799-4370

State DEQ Office (208) 373-0502

Website: <http://www.deq.state.id.us>

POTENTIAL CONTAMINANT INVENTORY

LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with above-ground storage tanks

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund, is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of storm water runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

EPA (U.S. Environmental Protection Agency), 1997, State Methods for Delineating Source Water Protection Areas for Surface Water Supplied Sources of Drinking Water, EPA 816-R-97-008, 40p.

U.S. Government Printing Office, 1995, Code of Federal Regulations, 40 CFR 112, Appendix C-III, Calculation of the Planning Distance

Idaho DEQ, Nov., 2000, State of Idaho, Information Management System (DWIMS).

Attachment A

Elk City Water and Sewer Association
Susceptibility Analysis
Worksheet

The final scores for the susceptibility analysis were determined from the addition of the Potential Contaminant Source/Land Use Score and Source Construction Score.

Final Susceptibility Scoring:

0 - 7 Low Susceptibility

8 - 15 Moderate Susceptibility

> 16 High Susceptibility

Surface Water Susceptibility Report

Public Water System Name :

ELK CITY WATER AND SEWER ASSN

Well# : BIG ELK CREEK

Public Water System Number 2250017

12/13/2000 11:31:53 AM

1. System Construction

SCORE

Intake structure properly constructed

YES

0

Infiltration gallery or well
under the direct influence of Surface Water

YES

2

Total System Construction Score

2 (Moderate Risk)

2. Potential Contaminant Source / Land Use

IOC
ScoreVOC
ScoreSOC
ScoreMicrobial
Score

Predominant land use type (land use or cover)

BASALT FLOW, UNDEVELOPED, OTHER

0

0

0

0

Farm chemical use high

NO

0

0

0

Significant contaminant sources *

NO

Sources of class II or III contaminants or microbials

not present

0

0

0

0

Agricultural lands within 500 feet

NO

0

0

0

0

Three or more contaminant sources

YES

1

1

1

0

Sources of turbidity in the watershed

YES

1

1

1

1

Total Potential Contaminant Source / Land Use Score

2

1

1

1

3. Final Susceptibility Source Score

4

3

3

3

4. Final Source Ranking

Low

Low

Low

Low